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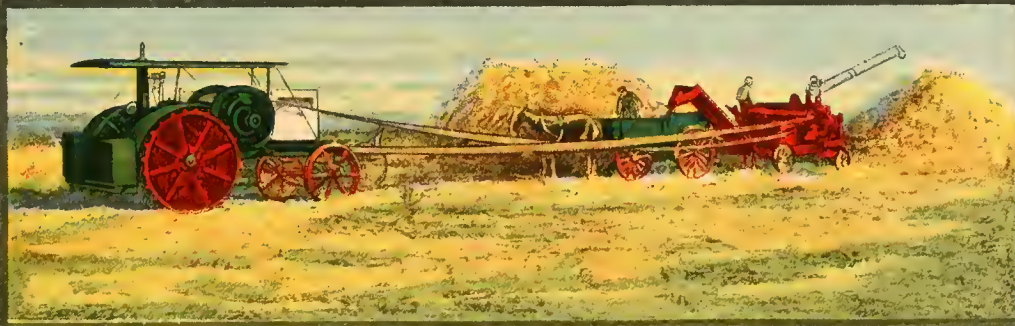
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INTERN

OF AMERICA



I H C TITAN OIL TRACTORS





IHC TITAN OIL TRACTORS



International Harvester Company of America
(Incorporated)

Chicago

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U S A

Around the World



Threshing in Germany



Plowing near Riga, Russia



A big estate in Russia



Plowing in France



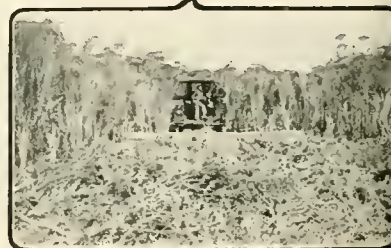
Plowing in Roumania



A Titan 30-60 in Tunis



Working in Turkestan



Clearing land in Australia



Titan Tractors are used

with the Titan Tractor



Threshing in Canada



Plowing in Canada



Titan 18-35 threshing in Nebraska



Titan 12-25 plowing in Illinois



Plowing in Porto Rico



Making good in Cuba



Titan 18-35 in Kansas



Starting a wheat field in Argentina

in every Civilized Country

I H C TITAN OIL TRACTORS

Cheaper Farming

Increasing Cost of Horse Power



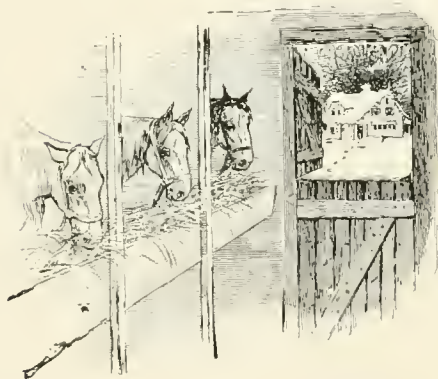
An expensive farm power

The American farmer of today is face to face with the power problem. It has been slowly developing in the last few years and recent conditions have brought it more forcibly to the front. Farm power is usually the horse and in the past it has proved a very satisfactory power. Slowly during the last few years, but more rapidly within the past year, the farm work has increased more in volume than horses have in numbers. This, together with the large number of horses (78,799 in five months in 1914 alone) that are now being shipped out of the country, has stimulated the price of horseflesh far above the actual value that can be obtained

from it on farm work. The maintenance of horses has also increased enormously. Feed has gone up and is becoming more scarce in many localities, and horses must be fed every day in the year. Horses and their feed require large buildings for housing and protection. Building operations are not only expensive, but the buildings filled with hay and other inflammable material are a big fire risk—so much so that farm barn insurance is extremely high, there being no adequate fire protection within reach.

Decreasing Cost of Oil Power

Contrasted with the increasing cost of animal power is the decreasing cost of tractor power.



Horses eat all the year 'round

The first machines operated on steam—a reliable, but expensive form of power. Then came the gasoline tractor cutting the cost of power below that of the steam tractor and animal power. Now we have the Titan oil tractor which operates on kerosene, distillate, solar oil, and other cheap fuels which can be bought in most localities for about half the cost of gasoline—and the Titan oil tractor uses less kerosene than the old tractors did gasoline and delivers just as much and far more reliable power.

There is another feature of Titan oil tractors which must be considered—while horses must be fed all the year around, the expense of a Titan stops with the work. It costs nothing to keep, yet it is ready at a moment's notice to start work again. The winter quarters of a Titan need be only a small shed.



I H C TITAN OIL TRACTORS

Titan Does Better Work



Average plowing by horses



With a Titan you can plow deep

Tractor Does Better Work than Horses

F. L. Peterson, of the California University farm, says: "In an actual experiment a gain of 200 per cent, which was made in the productiveness of a certain area, 100 per cent was found to be due to better plowing and harrowing, 50 per cent to better cultivation, and the rest to better seed."

Horses cannot be pushed harder to produce these results. In the spring when they are needed for plowing, they are soft and weak from their winter's inactivity. Care must also be

taken not to overwork the mares in foal. It takes more power, applied at the right time, to get the maximum yield. It must be a Titan oil tractor. A Titan oil tractor will plow deeper and keep it up twenty-four hours each day at the same pace, till its job is completed. A leading agricultural paper quotes that it is impossible to get several drivers to plow furrows of the same size. This cannot be true of a Titan. It is a machine. The speed is the same at all times. The plows are set and mechanically maintained at required depth; the width of the furrows is fixed by the rigid plow frame. Therefore, the work must be uniform in every particular, and the same kind of a job can be done at the close of a day as at the start. This is true also for disking, harrowing, seeding, and all other work done by a Titan. The result is an even stand and a yield of greater value.



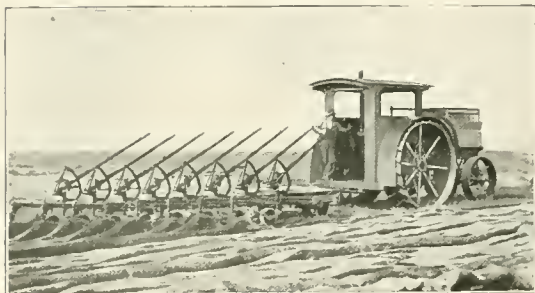
A Titan 12-25 does a clean, uniform job



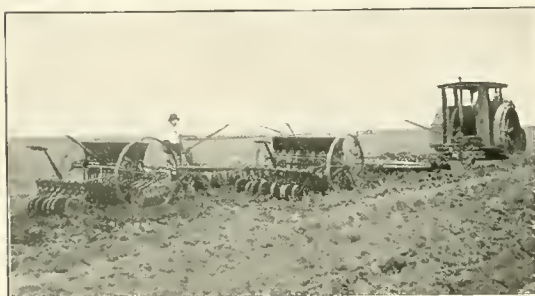
I H C TITAN OIL TRACTORS

A Titan Gets Through On Time

Saves Many Wasted Hours



A Titan 30-60 plowing 28 acres in a ten-hour day



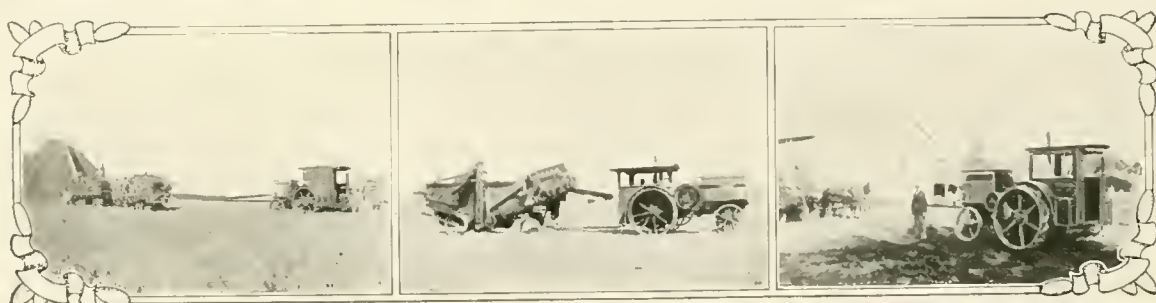
Plowing and seeding in one operation with a Titan



It does not take long to cut the crop with a Titan

Getting through on time with a Titan oil tractor does not mean a hurried, skimped job. It means when horses are standing idly in the shade or in the barn, exhausted from the heat and work, the Titan goes right along. It travels all day in the same reliable and efficient manner, never slackening or skimping the work. Never a year comes but what you are rushed with some of your work. Many times a few days saved means money in your pocket. If you have gotten behind in your work or you think the weather or soil conditions will not be ideal for working very long, you can work a Titan night and day—even Sundays, if you want to. It has no feeling and does not need a rest every hour or so, or at night. The only time it loses, is a few minutes' stop to grease bearings and to fill up with fuel, oil, and water once or twice a day, and it is ready to start again at the same pace. Much time is also saved in the morning and night which is given to the care of horses. When you quit for the night, the tractor stops in its tracks and is ready to start in the morning where it left off the night before. Not only is time saved by the tractor, but it does work in weather that is injurious for horses and does it as well as in good weather, and the operator does not suffer as he is protected by the spacious cab.

The Titan has another feature that saves much time and is used with success in the Northwest. On virgin land, where it is desirable to plow shallow, disks, harrows and oftentimes grain drills are also attached to the engine, making a perfect seed bed in one operation. This can also be accomplished where deeper plowing is advisable by using fewer bottoms.



I H C TITAN OIL TRACTORS

A Titan Saves Labor

A Titan Saves Labor at Every Job



When the horses' work is done you still have to take care of them

disking and harrowing can be done in one operation. Another big saving of labor is the time spent in taking care of horses. They must be fed and watered three times a day and bedded at night all the year 'round, while all the care a tractor needs is a little cleaning

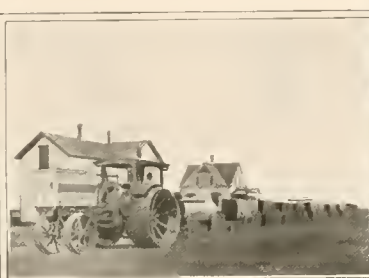
every day or two and a good oiling every day, and then only when it is being used. When you come to think of it, you are really working as much for your horses as they work for you, and your time is far more valuable than theirs.



You work all the year for your horses to get a few months' work



The tractor in its little shed needs no attention

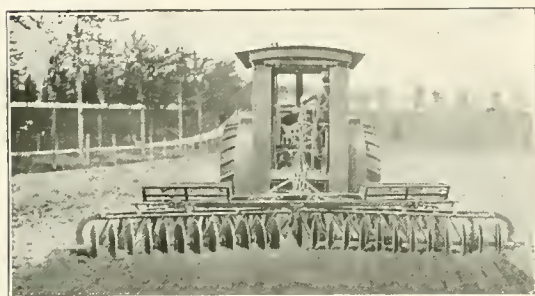


I H C TITAN OIL TRACTORS

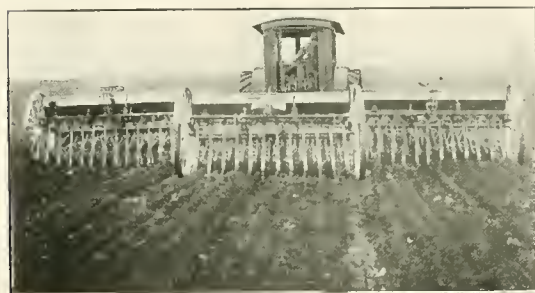
Titan Oil Tractors Do a Great Variety of Work



Titan 12-25 reeling off the acres



Titan 30-60 making a good seed bed



Seeding a big acreage



Saving the grain with a Titan

Grubbing and Plowing

Clearing land is easy work for a Titan. The large machine will handle two 24-inch grubbing plows, plowing twelve inches deep through brush land and small saplings, cutting the roots and turning them over. They are also extensively used for clearing operations, pulling up the smaller trees and removing the larger stumps. For plowing they are the ideal power, doing a clean, even job in any kind of soil at any depth the plows will go, and doing it in far shorter time than can be equalled by any other power. They are one-man outfits.

Disking and Harrowing

After the plowing the seed bed is of next importance. A thorough breaking up of the plowed ground is of great value to obtain the best results from a good job of plowing. This takes power, and must be done quickly. It is just the kind of work that a Titan will help you with. You can load it up with double disks, land rollers or packers and harrows all at once. No need to go over the same ground twice. Then the disks and packers can be weighted down good to secure the maximum results without taxing the tractor.

Seeding

Seeding is an operation that must be done on time in order to insure a maximum yield. With a Titan this is always accomplished. A Titan can be crowded—it will work overtime or nights without injury, and in case the plowing or harrowing has been delayed, the seeders can be attached after the plows or harrows, and the seed drilled in at the same time without going over the ground again.

Harvesting

When the grain is ripe there should be no delay. In the heat of the summer horses or mules cannot be worked to their limit, and it is also hard on the drivers. Their limit is only ten to twelve acres a day to the binder, and in heavy grain it taxes the teams to the utmost. A Titan oil tractor is not susceptible to the heat and flies or bothered by the heavy grain. It will work all day without rest, cutting its thirty to sixty acres a day according to its size, and get the job done before the grain is overripe.

I H C TITAN OIL TRACTORS

Titan Oil Tractors Do a Great Variety of Work



A Titan 18-35 threshing the crop



An 18-35 Titan making the farm profitable



Hauling the crop to market with a Titan 30-60



Titan 30-60-H. P. tractor and elevating grader

Threshing

Titan oil tractors furnish the steady, reliable power necessary for the job at less cost than any other power. There are no sparks to look out for, no boiler to tend, no coal or water wagons with their drivers to pay for. Just fill up with fuel, oil, and water in the morning, and a Titan will run all day with very little attention or care; in fact, the operator can help the threshing gang most of the time.

Belt Power

Titan oil tractors are particularly adapted for belt work. Their speed variation is very slight, due to their multi-cylinder construction, throttling governor and perfect balance. Their heavy flywheels are an aid to close regulation. Titan front trucks are narrow, so that there is no interference with the belt. On a Titan the operator's difficulties are reduced to a minimum. There is no fire to keep up or other work around the engine other than to see that it is well lubricated every hour or so. On a Titan you never have to wait for steam—you have the engine's maximum power at your instant command.

Hauling

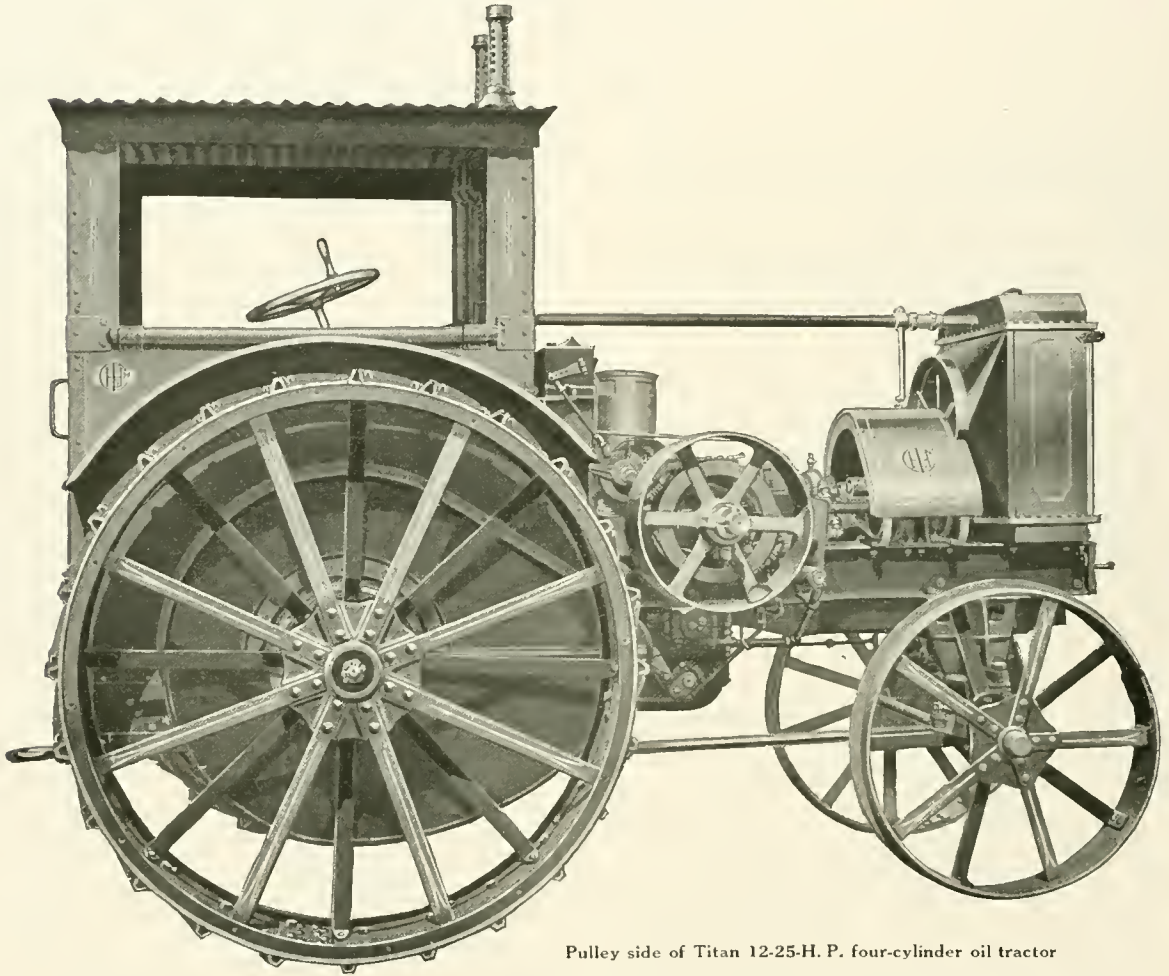
There is no better power for hauling than a Titan oil tractor. They have sufficient weight for tractive power, but are light enough to cross the average bridge without danger or work on country roads without miring. They do not require extra wagons for hauling fuel or water; in fact, they require very little water for a day's operation. The operator is comfortably provided for. The platform is spring-mounted, and a spring seat is part of the regular equipment.

Road Work

The success of Titan oil tractors on road work is country-wide, and the saving effected by their use over steam and horse power is remarkable. They perform all the work of road building. Digging up old roads, grading with all types of graders, hauling stone and gravel, operating stone crushers, concrete mixers and asphalt machines are some of the jobs that Titans are being used for. Many townships, counties, and contractors have purchased Titans, and they always make good.

I H C TITAN OIL TRACTORS

Titan 12-25-H. P. Oil Tractor



Pulley side of Titan 12-25-H. P. four-cylinder oil tractor

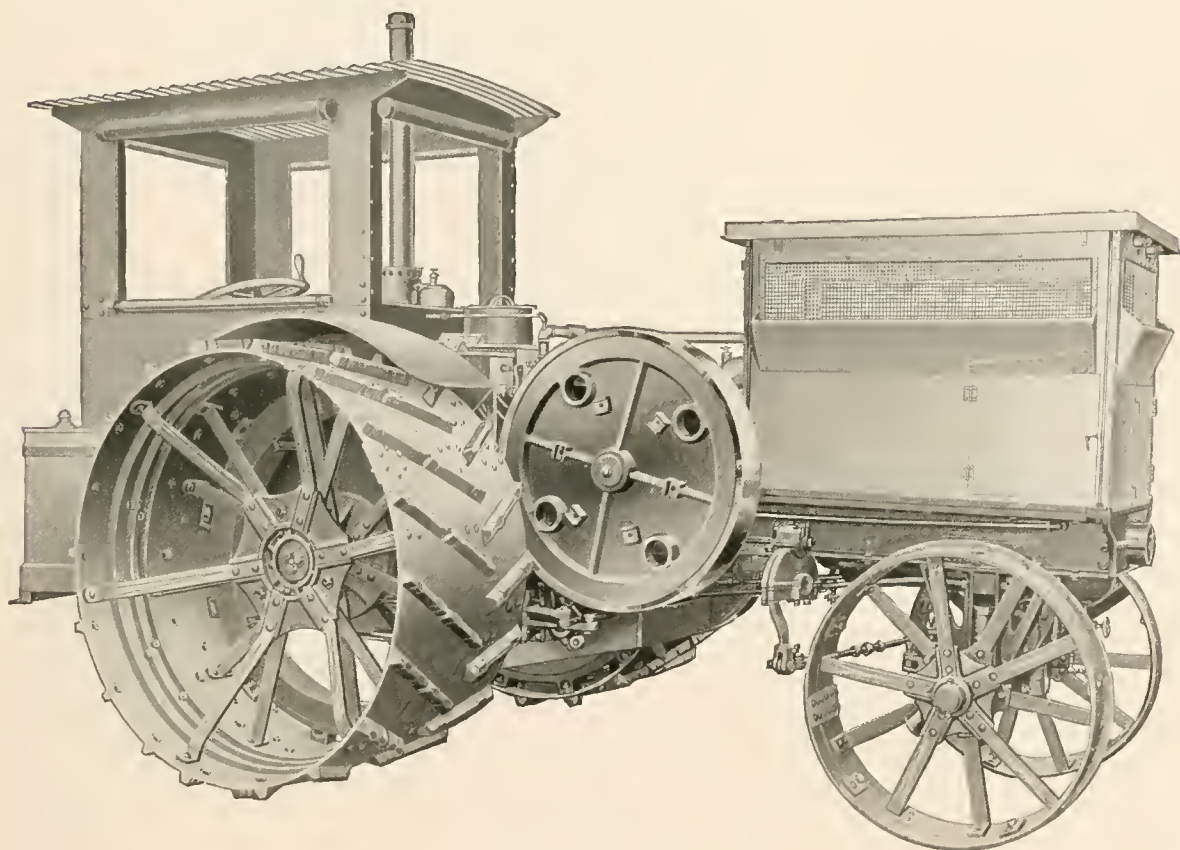
Equipment: Completely equipped ready to run including built-in friction clutch pulley, magneto, oil can, can of lubricating oil, and necessary tools.

Special accessories: Kerosene headlight, acetylene headlight, special size pulley, 4-inch rear wheel extensions—cab curtains and sand lugs can be furnished at extra cost.

Rated Horse of Engine r. p. m.	High Speed of Tractor—miles per hour	Low speed of Tractor—miles per hour	Speed of Engine—revolutions per minute	Cylinders		Pulley		Front Wheels		Drive Wheels		Capacity of gasoline tank, gallons	Capacity of kerosene tank, gallons	Total length inches	Total width inches	Total height inches	Approximate shipping weight, lbs.
				Bore, inches	Stroke, inches	Diameter inches	Face, inches	Diameter inches	Face, inches	Diameter inches	Face, inches						
25	2.4	1.57	575	5 1/4	7	22	5	40	7	66	14	6	30	140 1/2	85 1/2	118	9580

I H C TITAN OIL TRACTORS

Titan 18-35-H. P. Twin Cylinder Oil Tractor



Titan 18-35-H. P. oil tractor—pulley side

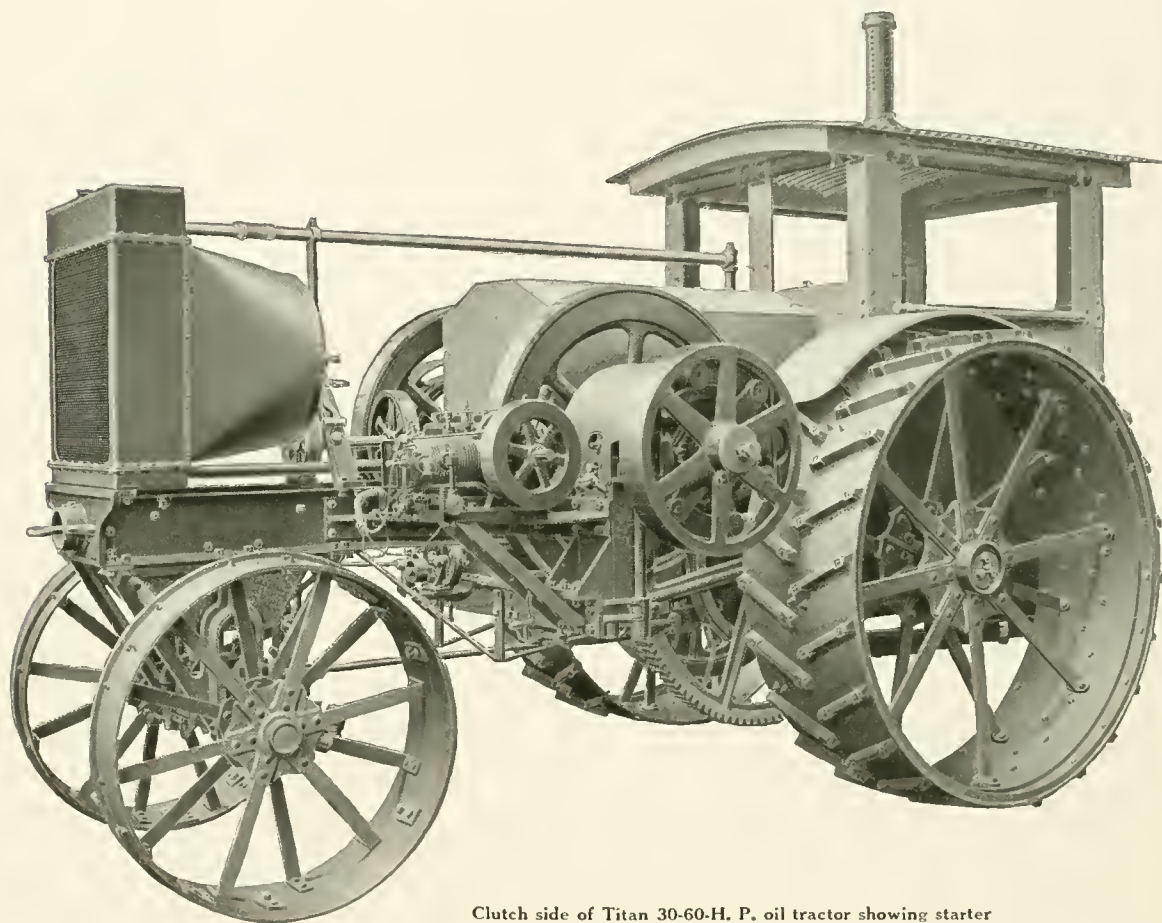
Equipment: Completely equipped ready to run including friction clutch pulley, batteries, magneto, front wheel extensions, oil can, can of lubricating oil, and necessary tools.

Special accessories: Kerosene headlight, acetylene headlight, special size pulleys, 10-inch rear wheel extensions—cab curtains can be furnished at extra cost.

Rated Horse of Engine Power at 425 r. p. m.	High Speed of Tractor—miles per hour	Low Speed of Tractor—miles per hour	Speed of Engine—revolutions per minute	Cylinders		Pulley		Front Wheels		Drive Wheels		Capacity of gasoline tank, gallons	Capacity of kerosene tank, gallons	Capacity of water tank, gallons	Total length, inches	Total width, inches	Total height, inches	Approximate road weight, pounds, all tanks filled	Approximate shipping weight, lbs.
				Bore, inches	Stroke, inches	Diameter, inches	Face, inches	Diameter, inches	Face, inches	Diameter, inches	Face, inches								
18-35	3.65	2.13	425	8	10	24	12½	38	9	63	22	20	43½	85	184½	96	123	16850	15700

I H C TITAN OIL TRACTORS

Titan 30-60-H. P. Twin Cylinder Oil Tractor



Clutch side of Titan 30-60-H. P. oil tractor showing starter

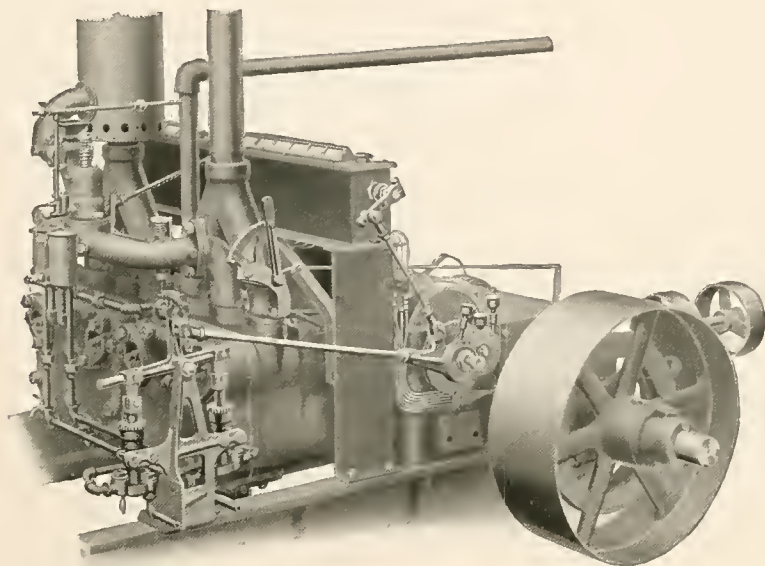
Equipment: Completely equipped ready to run including friction clutch pulley, batteries, magneto, front wheel extensions, oil can, can of lubricating oil, and necessary tools.

Special accessories: Kerosene headlight, acetylene headlight, special size pulleys, 10-inch rear wheel extensions—cab curtains can be furnished at extra cost.

Rated Horse Power at 335 r. p. m.	Speed of Tractor — miles per hour Engine at 335 r. p. m.	Speed of Engine — revolutions per minute	Cylinders		Pulley		Front Wheels		Drive Wheels		Capacity of gaso- line tank, gallons	Capacity of kero- sene tank, gallons	Total length, inches	Total width, inches	Total height, inches	Approximate road weight, pounds, all tanks filled	Approximate ship- ping weight, lbs.
			Bore, inches	Stroke, inches	Diameter, inches	Face, inches	Diameter, inches	Face, inches	Diameter, inches	Face, inches							
30-60	2.08	335	9	14	30	10½	44	10	72	24	26½	47	192	105	110	20,600	20,300

I H C TITAN OIL TRACTORS

Construction of 12-25-H. P. Oil Tractor



Titan 25-H. P. four-cylinder oil-burning power plant

Four-cylinder design: The Titan 25-H. P. power plant is a distinctly superior type of four-cylinder engine, developed especially to burn kerosene and stand up under the severe conditions imposed on an engine used for farm work. It gives you every advantage known to modern designing and has many new and exclusive features which add to its economy and reliability. It is a far more substantial construction than the automobile type motors and much easier to get at. The cylinders are horizontal, which is a big advantage in burning oil, and set across the machine so the power is delivered direct through spur gears without bevel gear. The four-cylinder construction and slower motor speed makes it practically free from vibration and prolongs its life. The working parts are completely enclosed in dust-tight crank case, which prevent excessive wear, yet it is an easy engine to get at. The crank case cover is removable, exposing all the principal parts for inspection or adjustment.

Cylinders: The cylinders are cast in pairs and are bolted to a substantial one-piece dust-tight crank case with a removable cover. Both the intake and exhaust manifolds lead from the cylinders so that the cylinder heads are left free.

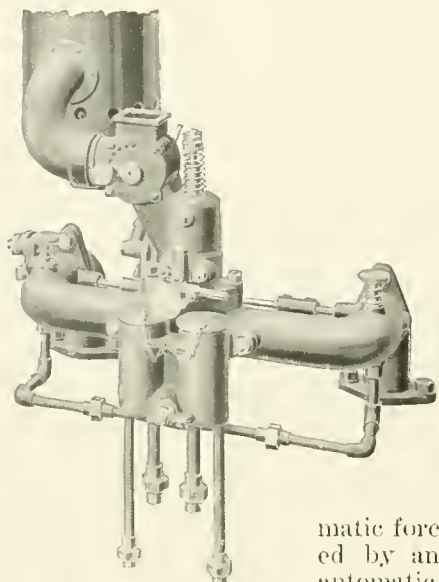
Cylinder heads: The cylinder heads are cast in pairs, each covering two cylinders, and can be removed without disturbing other parts. The removal of the cylinder heads gives the operator a clear view of the valve heads and pistons. The only parts attached to the cylinder heads are the spark plugs. This makes it a simple matter to remove them as they are always in plain sight and reach.

Only one mixer: One mixer with two fuel needle valves and a single water needle valve is used on the Titan 12-25 tractor so that the adjustments are reduced to the minimum. This also enables the operator to reduce the fuel consumption by obtaining a finer adjustment. For starting a hot air drum with a hot and cold air damper and two feed supply cups—one for gasoline and one for oil—are provided. The mixer will handle any of the cheap fuels such as kerosene, distillate down to 39° Baume, gas oil, solar oil, or motor spirits and will also burn gasoline or naphtha.

I H C TITAN OIL TRACTORS

(Construction of 12-25-H. P. Tractor — Continued)

Fuel supply: The tractor is provided with two fuel tanks—a six-gallon gasoline tank for starting, and a thirty-two-gallon oil tank, which is sufficient for an all-day run. Two fuel pumps are also provided for pumping the fuel to the supply cups, one for gasoline and one for oil.

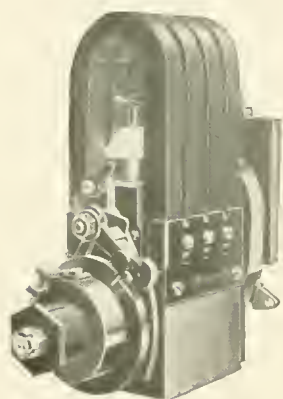


Titan oil mixer

Governor: A flyball throttling type governor is used which operates a butterfly valve on each branch of the intake manifold. This type of governor controls the amount of fuel mixture entering the cylinders and not only keeps the engine running at a perfectly steady speed, but varies the amount of fuel in proportion to the load.

Ignition: The ignition is jump spark, the current being furnished by a high-grade gear driven magneto. The magneto used enables you to start as easily as on batteries—eliminating all battery equipment and the troubles they are heir to. This magneto has an automatic starting device which enables the magneto to furnish a good spark for starting. When the engine starts, this device is automatically thrown out of action.

Lubrication: The motor is lubricated by an automatic force-feed oiler with twelve feeds. The transmission is lubricated by another automatic force-feed oiler with five feeds. These automatic force-feed oilers are the newest design with all working parts enclosed and running in oil. These lubricators are valveless and there are no springs or ball valves to give trouble. They will force oil in any temperature and against a pressure of 2,000 lbs. They protect you against dry bearings. At the same time no oil is wasted.



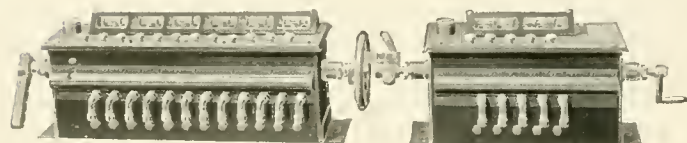
Magneto

Cooling: The motor is water cooled. The water is circulated through the cylinders and a vertical tube radiator by a belt-driven rotary pump. A belt-driven fan is also provided to aid radiation. This method gives perfect cooling and is very economical of water.

Frame: The frame is constructed of steel. It is spring hung on the trucks so that the engine rides easy, even on rough ground. This also saves the tractor, and prolongs its life.

Transmission: With the Titan 12-25 you have two speeds forward and one reverse at your command, all controlled by a single lever. The gears run in oil in a dust-tight case with a removable cover. The double chain drive to the rear wheels is also tightly encased. This method of driving eliminates gear troubles and gives the engine a more elastic load. An automatic force-feed oiler lubricates the bearings.

Rear Axle: The rear axle is provided with adjustment plates which can be shifted from rear to

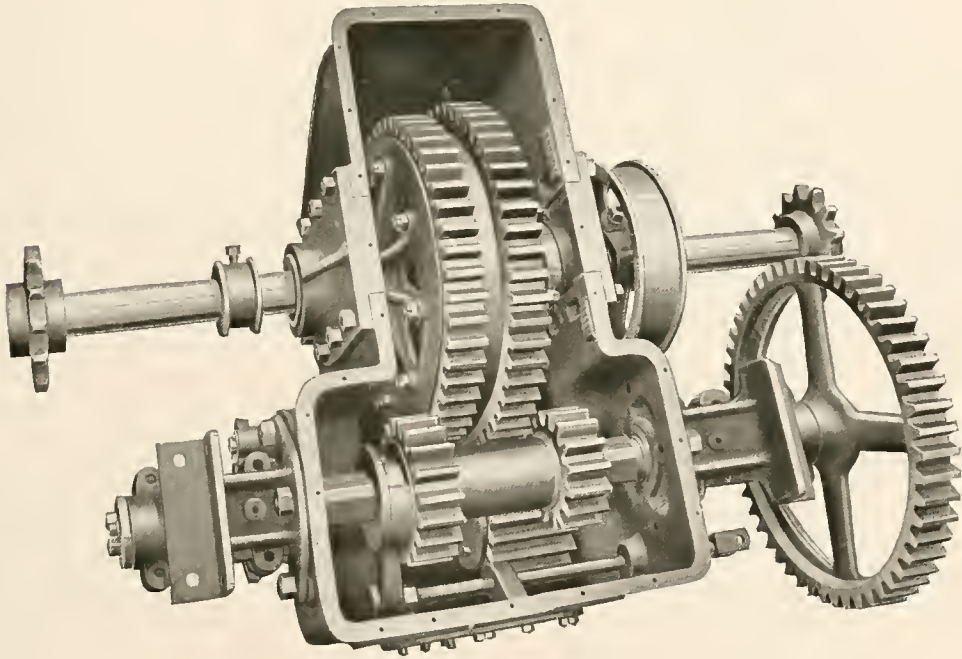


Engine oiler

Transmission oiler

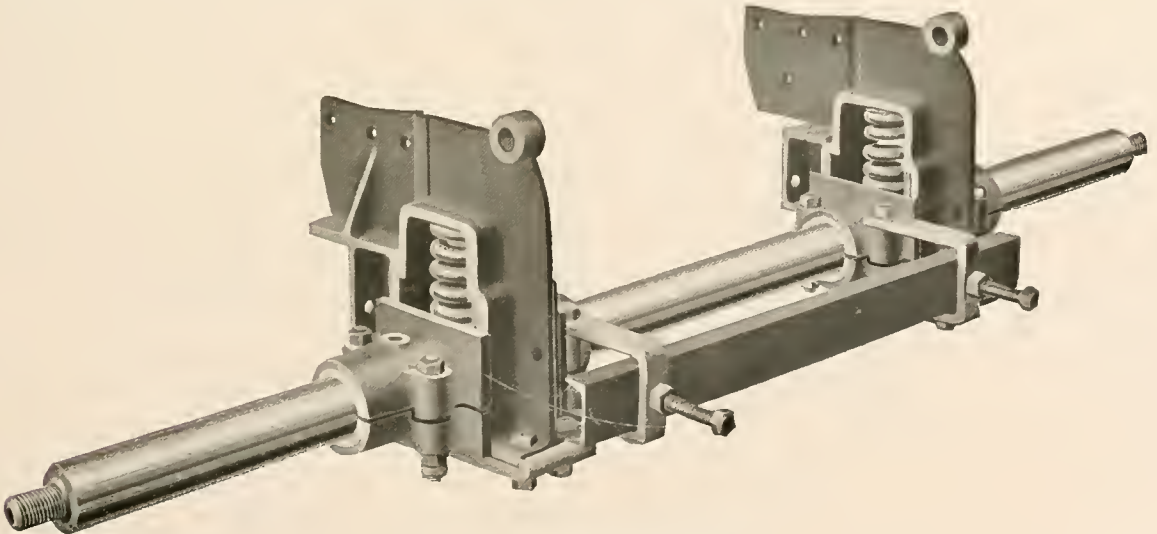
I H C TITAN OIL TRACTORS

(Construction of 12-25-H. P. Tractor—Continued)



Transmission with cover removed

front side of the axle bearings if it is desirable to tighten the driving chains. This method prevents one side from being tightened more than the other, thus throwing the axle out of alignment. Note the spring mounting built like a Pullman car.



Rear axle showing spring mounting



Reliable Draw-Bar Power Steady Belt Power

This Titan Oil Tractor is Mechanically Ahead
of the Age. Its Exclusive Features Save
You Money, Time and Labor



**Titan 12-25-H. P. Oil-Burning
Four-Cylinder Tractor**

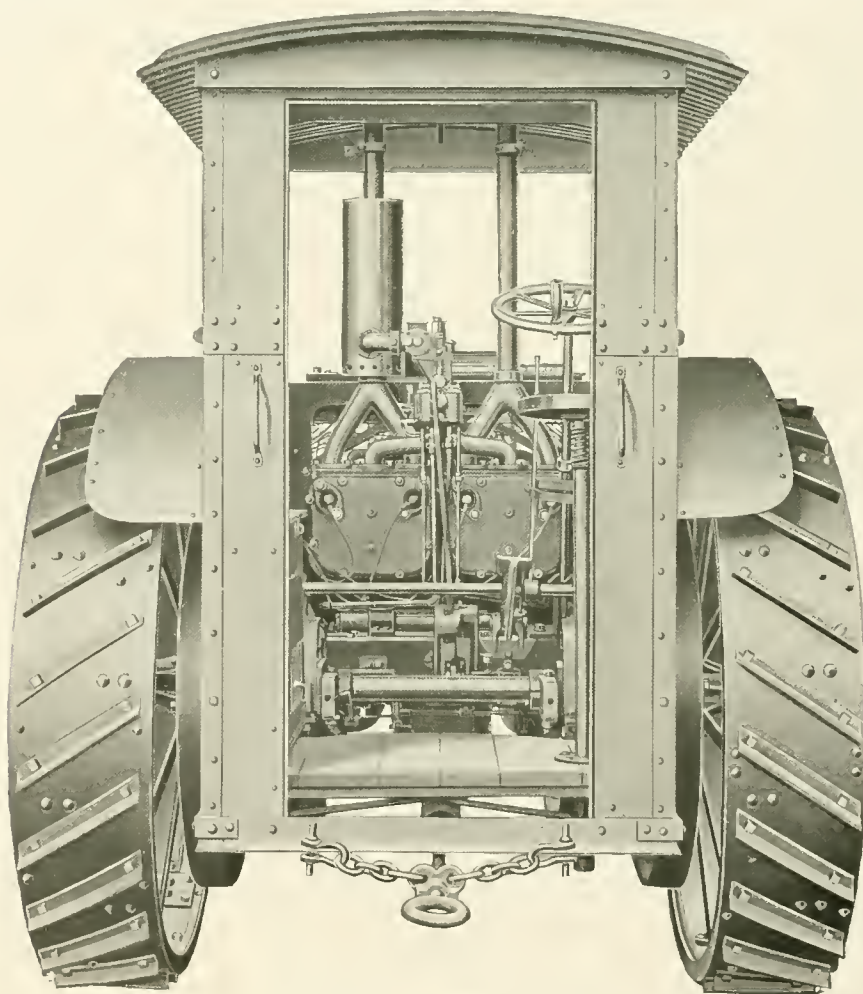
I H C TITAN OIL TRACTORS

(Construction of 12-25-H. P. Tractor—Continued)

Steering: The automobile type steering device makes steering easier and far more positive than the old chain type. The castings are high-grade steel and the front axle is well trussed. Operators who have handled the heavy old-type tractors will be agreeably surprised by the Titan 12-25. Its light weight and spring mounting make it very easy riding. The short wheel base and automobile-steering device enables it to turn very short. The two-speed transmission gives the operator a high power low speed for tough plowing and hills, and a brisk speed for road work, light farm work, etc.

Light weight: Light weight in the Titan 12-25-H. P. tractor does not mean flimsy construction, but merely that the design has eliminated much weight, and the generous use of steel castings has not only reduced weight, but increased the strength.

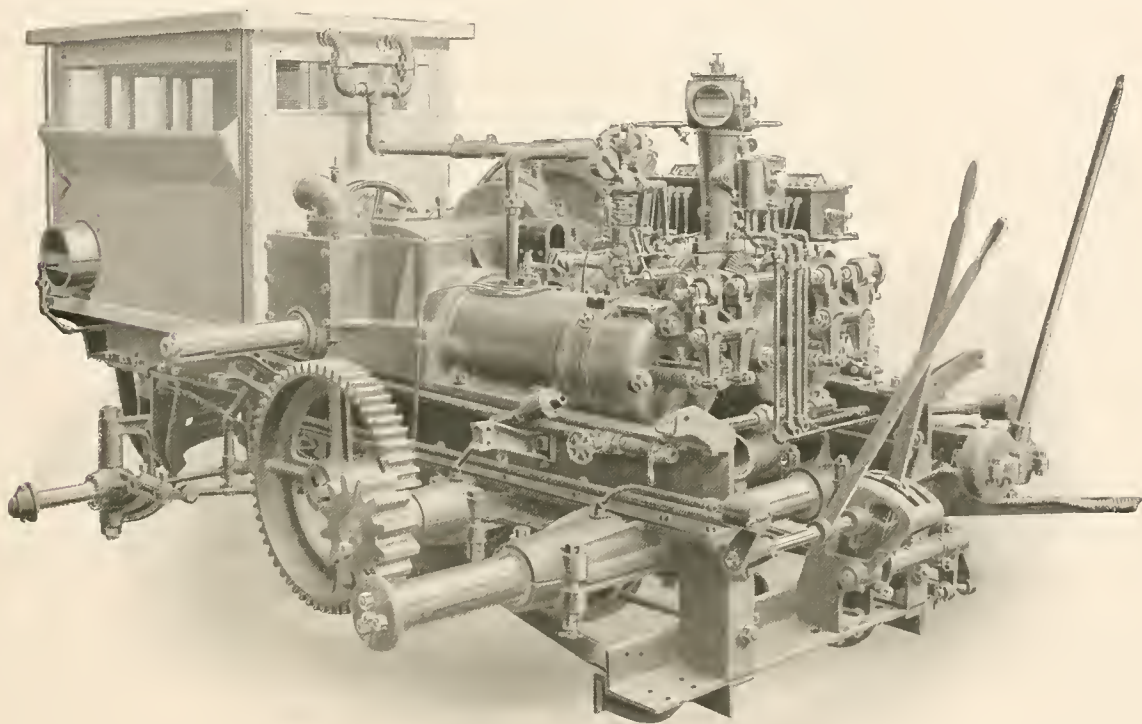
Cab: The cab is roomy and provided with a comfortable seat for the operator, placed on the right side, giving a clear view ahead when plowing, and within easy reach of the operating levers, brake lever, etc.



Rear view of Titan 12-25-H. P. oil tractor

I H C TITAN OIL TRACTORS

Construction of Titan 18-35-H. P. Oil Tractor



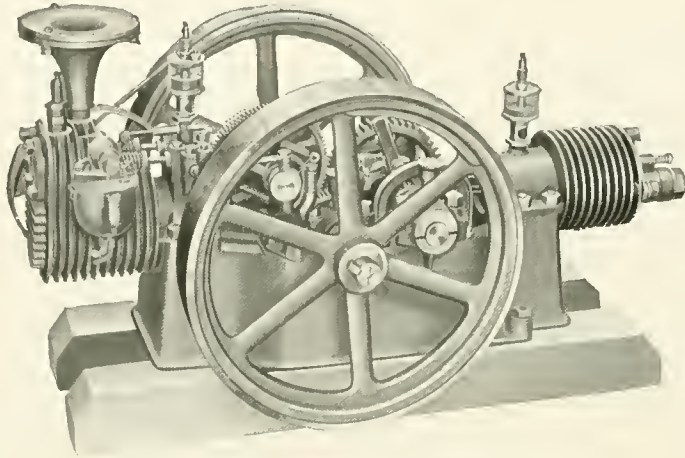
Power plant of Titan 18-35-H. P. oil tractor

The Titan 18-35-H. P. tractor has been designed for those who need a more powerful tractor than the 12-25-H. P. size. This tractor has many new and exclusive features of design which increases its sphere of usefulness and gives it many advantages over the ordinary type of tractor. Although this tractor is lighter in weight for its power than many others, no strength or draw-bar power has been sacrificed. Steel has been used generously in its construction, so that in reality it is much more rigid than the heavier type of tractors. The engine has been designed with a cast-iron dust-tight crank case for protecting the pistons and cylinders, crank shaft, etc., from dust.

For road work, the two-speed transmission and automobile type steer gives it a decided advantage, and the lighter weight permits the crossing of bridges, unsafe for heavier tractors. For threshing, this tractor has no superior. It gets over the road fast, requires little attention while operating, and the throttle governor and twin cylinders hold the engine to a steady speed at all loads. The speed can also be varied to suit conditions by a speed regulator controlled from the cab. The comfort of the operator has been given special attention and every possible convenience has been provided.

I H C TITAN OIL TRACTORS

(Construction of 18-35-H. P. Tractor — Continued)



Titan combined gasoline engine and air compressor starter fits in compartment in front of cooling tank

Self-starting device: This consists of a complete little gasoline engine and air-compressor power plant and an air starting system. The gasoline engine and compressor are located under the forward part of the water tank and consist of a $\frac{3}{4}$ -H. P. air-cooled engine geared to a small air compressor mounted on the same base. This outfit is completely enclosed by doors to keep out the dust, which, when opened, exposes the entire outfit to view, and gives easy access to the parts. The air compressor pumps air into a storage tank, located between the forward part of the truck sills, and from the tank it is piped to the left-hand cylinder of the large engine and enters the cylinder through an automatically-operated valve. For starting the engine, mixer is adjusted the same as starting by hand, then the air valve is thrown into gear and the compressed air enters the cylinder and operates it the same as the gas. When the fuel ignites, the air valve is held closed. The air tank will hold enough compressed air for starting several times and a gauge is located near it which shows air pressure in the tank. With this outfit, there is no turning the engine over by hand.

Detailed Description of Titan 18-35-H. P. Oil Tractors

Power plant: Twin-cylinder oil engine, 35-H. P.

Ignition: Make-and-break, batteries to start, gear-driven magneto when running.

Lubrication: Twelve-feed automatic force-feed oiler operated from cam shaft.

Governor: Fly-ball throttling governor operating butterfly valve in mixer.

Cooling: Belt-driven centrifugal pump and spray type cooling tank.

Starter: Complete $\frac{3}{4}$ -H. P. air-cooled engine and air compressor and air storage tank.

Steering: Automobile type with narrow front trucks.

Transmission: Sliding gear type with two speeds ahead, 3.65 and 2.13 miles per hour and slow speed reverse

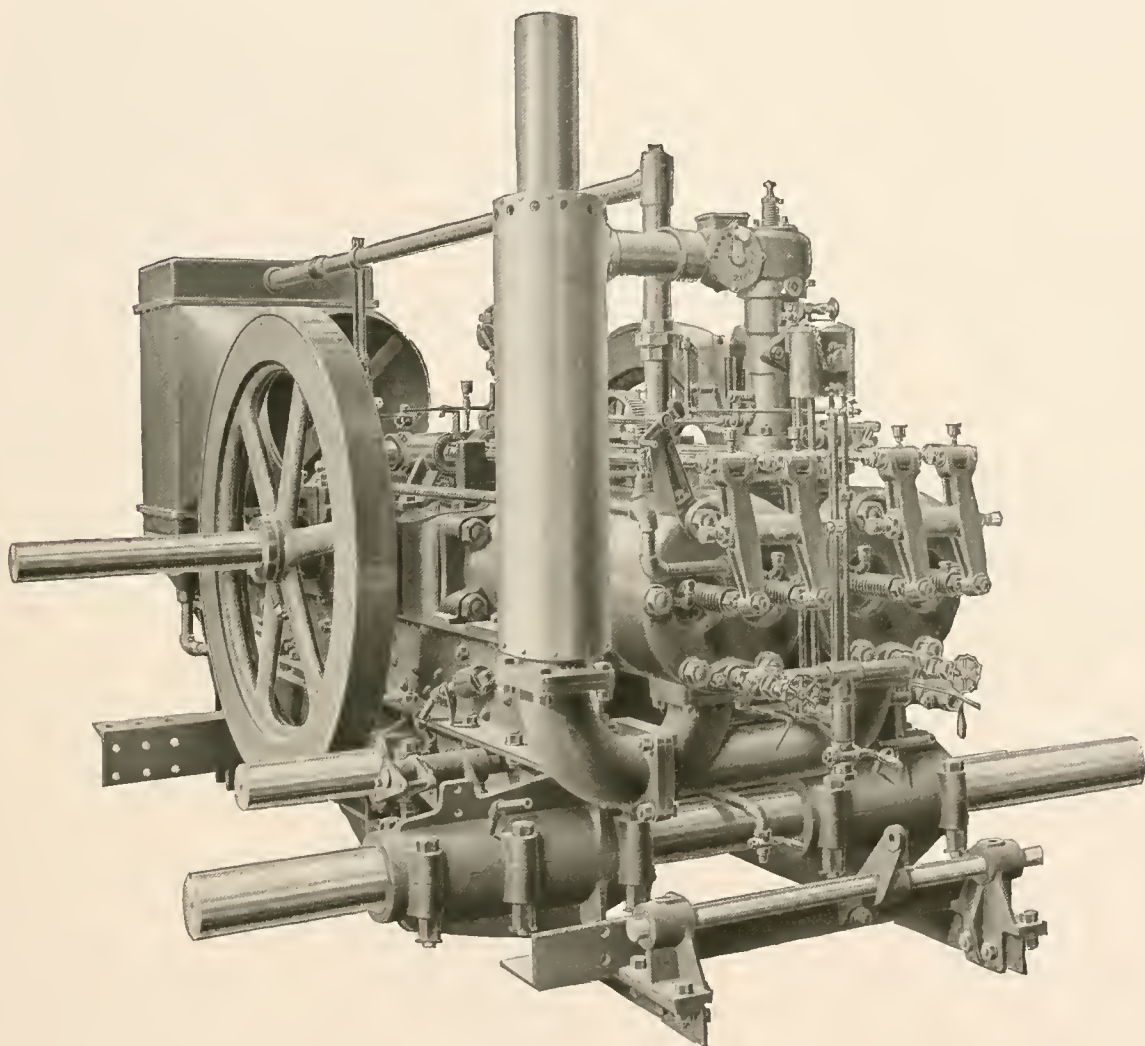
Double gear drive: The strain is equal on each side.

Gear lubrication: Automatic force-feed oiler.

Cab: Two-piece removable cab, curtains on special order, and seat, spring hung platform.

I H C TITAN OIL TRACTORS

Construction of Titan 30-60-H. P. Oil Tractor



Titan 60-H. P. oil-burning power plant

Power plant: The twin cylinder 60-H. P., four-cycle engine used on this tractor has established a remarkable record for strength and durability. The design is simple and all parts are easily accessible. A sheet metal case incloses the engine and is equipped with seven doors for easy access to all working parts.

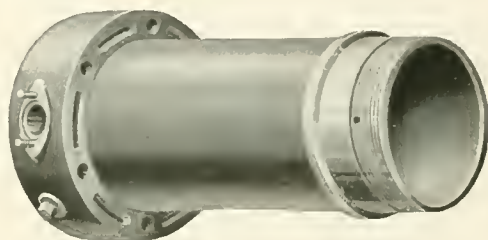
Valves: The valves are mounted flush in the cylinder head so that there are no valve pockets or projections in the cylinder other than the ignitor.

I H C TITAN OIL TRACTORS

(Construction of 30-60-H. P. Tractor — Continued)

Cooling system: The engine is water-cooled by means of a radiator and a centrifugal type circulating pump. The cylinders and jacket walls are not cast integral, so that, should occasion require, the cylinder liners may be easily taken out.

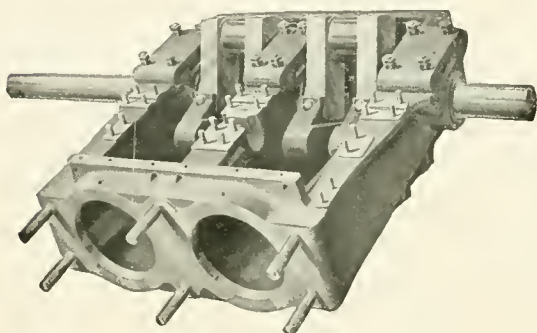
Ignition: The ignitors for both cylinders are operated by an eccentric rod through a bell crank. This eccentric receives its motion from the cam shaft. This rod also operates the mechanical oilers and the fuel pumps. The ignition current for running is furnished by a magneto, gear driven from the cam shaft. For starting, batteries are furnished.



Removable cylinder liner

Engine gears: All cam gears are steel, machine cut, and are located inside of the crank case. They are mechanically oiled, and protected from dust and dirt.

Governor: The governor is of the fly-ball, spring-controlled throttling design operating a butterfly valve in the intake manifold. A small rod operated by a crank conveniently located near the cylinder head permits the speed to be varied from 270 R. P. M. to 350 R. P. M.



Note the three massive crank-shaft bearings

Crank shaft: The crank shaft is made from a solid steel ingot and runs in three extra large removable babbitt bearings.

Connecting rods: Connecting rods are drop-forged steel, carefully machined and polished. On the crank end of the rod is a divided bearing box which can be removed without removing the piston or wrist pin. The wrist pin bearing has a phosphor bronze bushing which can be easily adjusted by the bolts located in the head.

Fuels: Titan tractors are oil tractors and need no change for operation on the different grades of oil fuels. Many kerosene engines have been designed, but the Titan holds the distinction of being the first kerosene tractor that has successfully overcome all difficulties in a simple and effective manner, delivering its maximum power on kerosene, distillate, solar oil, gas oil, motor spirits, gasoline, motor spirits or naphtha.

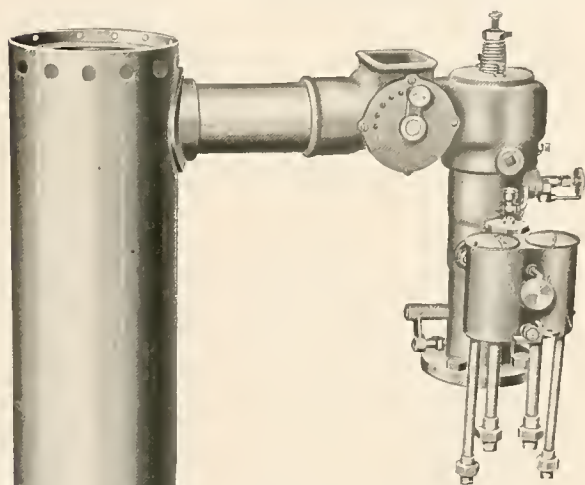
Fuel mixer: The fuel mixer is especially adapted for operation on the lower grade fuels, and will operate on kerosene, distillate, solar oil, gas oil, gasoline, motor spirits or naphtha equally well.

The design is very simple. It consists of two separate constant level fuel cups, each supplied with fuel by a fuel pump, one pumping from the small gasoline tank for starting and the other from the large oil tank for operating. The two supply cups are connected with the needle valve and spray nozzle by a valve so the engine can be started on gasoline and run for a few minutes till the engine is warmed up and then switched to the cheaper fuel by simply turning the valve handle which connects the supply cups with the needle valve.

One of the strong features of the mixer is the perfect control of the air supply to the mixer and the automatic supplying of water when operating on low grade fuels. An adjustable valve is provided in the air pipe for regulating the hot air from a drum around the exhaust pipe. This makes it possible to vary the temperature of the air to the mixer to meet the varied conditions of weather. A third air inlet is provided with a spring controlled poppet valve,

I H C TITAN OIL TRACTORS

(Construction of 30-60-H. P. Tractor — Continued)



Complete 60-H. P. mixer and hot air drum

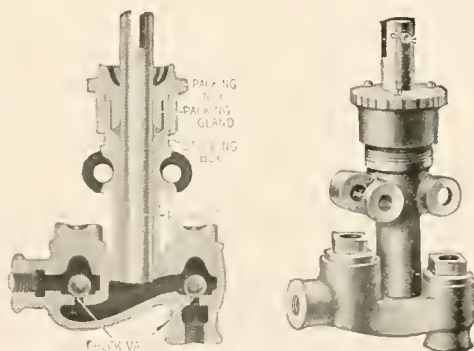
Starting engine: The starting engine is a complete little power plant in itself, equipped with its own gasoline tank and battery box. It is of the four-cycle type of design, air cooled, with an enclosed crank case. Jump spark ignition is used, the current being furnished by batteries and a jump spark coil.

For starting, the mixing valve on the tractor is set for gasoline and the compression relief cam

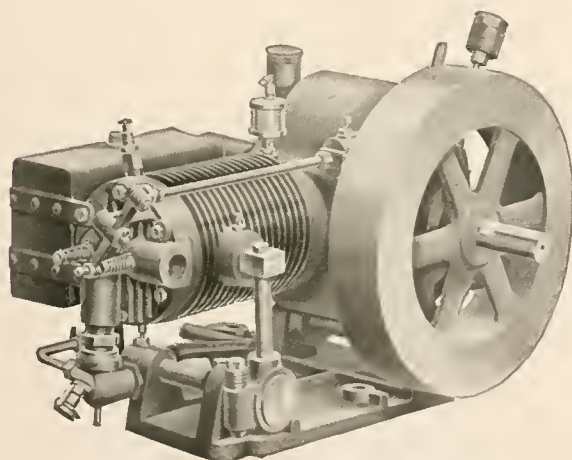
which only admits air when the engine is operating under load. When this valve opens and admits air, water is also admitted, both in proportion to the load on the engine.

The complete mixer is so simple and so near automatic that it requires practically no attention after starting.

Fuel pumps: The fuel pumps are located so that the operator can pump up a supply of fuel by hand from the platform or from the ground. The pumps are of the plunger type with ball valves. All parts of the pumps are brass with the exception of the plungers and balls, which are of steel.



Sectional and side views of fuel pumps



Flywheel side of starter showing eccentric bearing

is thrown in. The small starting engine is started and allowed to run free for a minute till up to speed, then the lever rotating the eccentric bearing on the starting engine is pulled up till the friction pulley is pressed against the large engine flywheel. This rotates the large engine at a sufficient speed for starting and the mixers can be adjusted at leisure. When the large engine starts, the starting engine is tilted back and stopped.

Transmission: An examination of the transmission will reveal many good features. All the gears and pinions are cast steel. The driving pinion is in the best location to withstand all strains. This pinion is feather-keyed by two large keys to the clutch sleeve so that, although it may be easily shifted from forward to reverse position, it is securely held on the sleeve. Note that there is no overhanging of working parts. Every gear is

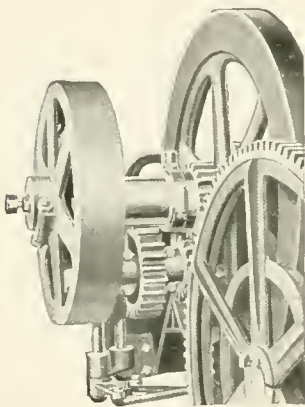
I H C TITAN OIL TRACTORS

(Construction of Titan 30-60-H. P. Tractor—Continued)

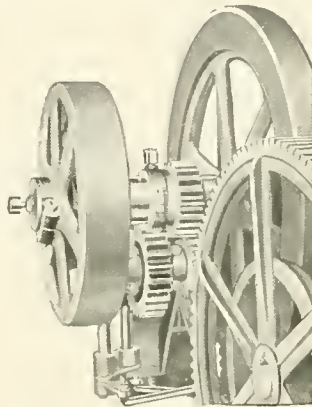
close to a bearing. The clutch, even though it is located on the end of the crank shaft extension, is in a good location, because the strains produced when it is thrown in are torsional, hence it is merely a question of making the crank shaft heavy enough to withstand them. The intermediate gear shaft is exceptionally short — only nine inches long, and has ample bearings.

Forward speed: When the lever is shifted for forward speed the pinion on the engine crank shaft meshes directly with the bull gear on the countershaft and the pinion on the countershaft meshes with the differential gear on the rear axle.

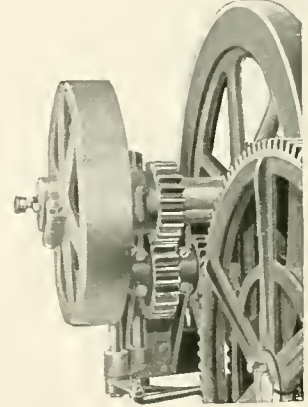
Reverse: The action of the reverse is just as positive as that of the forward speed and is accomplished by means of sliding gears. The driving pinion of the clutch spider sleeve may be shifted to mesh with the intermediate gear on the intermediate gear shaft just below the crank shaft extension. This shaft also carries the reversing pinion which meshes with the large countershaft gear. This method of reversing is practically the same as that used on automobiles.



Forward speed



Neutral



Reverse

Showing operation of transmission

Belt work: When the engine is used for belt work, the driving pinion may be shifted to a neutral position on the clutch spider so that none of the transmission gears will revolve, or, the driving pinion may be moved to a neutral position and the clutch thrown in so that the clutch sleeve and driving pinion revolve as integral parts of the crank shaft. In this way, even though the driving pinion is revolving, there is absolutely no wear of any transmission part.

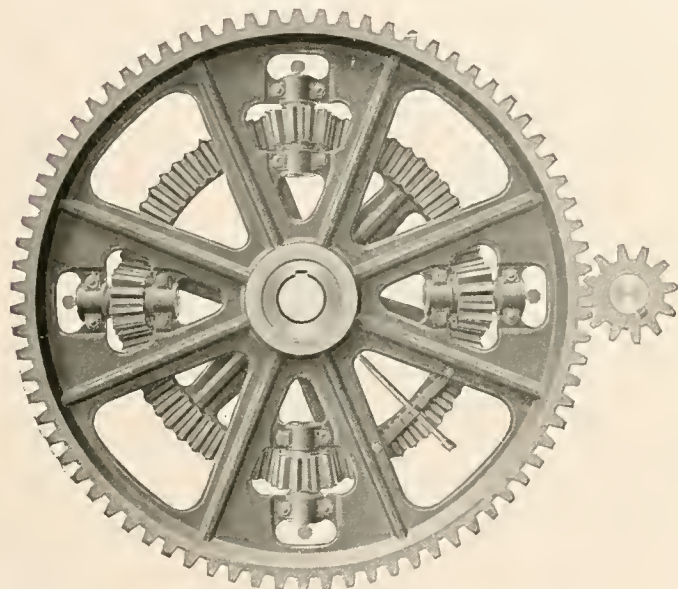
The intermediate gear shaft is short, and has ample bearings and supports at both ends to hold it absolutely in correct alignment with the crank shaft and countershaft.

The differential gears: They are made of steel, of ample proportions, and of the simplest design known to motor vehicle and traction engine construction; they are located in the right hand drive wheel, in the large driving gear, which is free to revolve and which carries the four bevel pinions. Two bevel gears, one on each side, mesh with these pinions — one bevel gear being keyed to the axle to which the left hand driver is keyed; the other being bolted to the right hand driver which revolves freely on the axle. When going ahead, both bevel gears revolve at the same rate and the pinions on the drive gear are at rest. In turning, when one wheel has a tendency to go slower, the pinions revolve on the bevel gear connected with the slow moving wheel and transmit a faster motion to the opposite bevel gear connected with the

I H C TITAN OIL TRACTORS

(Construction of Titan 30-60-H. P. Tractor—Continued)

outer wheel. This construction relieves the strain on the wheels and axles, allowing one driver to revolve faster than the other, although the power applied to each is the same.



Differential
View showing driving pinion, large driving gear, and differential gears, with outer gear removed

to it, while the right-hand driver is bolted to the outside bevel gear of the differential and is free to revolve. The inside bevel gear of the differential provides a bearing for the bull gear and is keyed to the axle.

Bearings: All bearings are of liberal proportions and carefully hand-scraped to a perfect fit. The two rear axle bearings give 37 inches of bearing surface — the left-hand bearing being 21 inches wide and the right-hand, 16 inches wide.

The left-hand countershaft bearing is 10 inches wide, and the right-hand, 12 inches — a total of 22 inches of bearing for this shaft. Rear axle, bevel pinion, intermediate gear, crank shaft, and the lower half of the countershaft bearings are of superior babbitt. The bull gear bushing and the upper half of both right-hand and left-hand countershaft bearings are special bearing metal. This special bearing metal is used on the countershaft bearings because it is this half of the bearing that is subject to all of the wear and strain.

Front trucks: The front trucks are narrow, the wheels being attached to steel knuckles of the automobile type. The steering knuckles are provided with grease cups.

Steering: Titan 30-60-H. P. tractors are equipped with an automobile type steering device, which makes steering much easier than the chain-to-axle method, and permits the front truck to be made narrow so the wheels will not interfere with a low belt when used for threshing. The truck is made exceptionally strong and is rigidly trussed, so there is no danger of breakage.

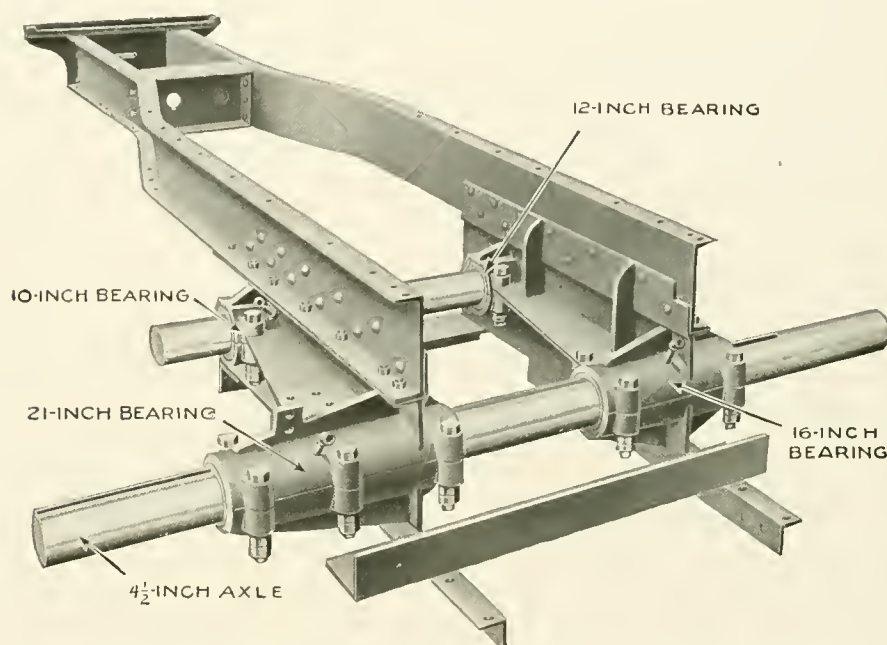
Truck frame: The truck frame consists of heavy steel channels, which are continuous from front to rear, and a heavy steel bearing frame riveted to the channels. A special quality of 9-inch steel channels is used, thus providing a frame amply strong to withstand all strains to which it may be subjected. The two large steel bearing castings riveted to this frame hold both the main axle and the countershaft bearings.

The engine frame is riveted to the 9-inch channels so that it practically becomes an integral part of the truck frame. This construction is clearly shown in the accompanying illustration.

Rear axle: The rear axle is made of cold-rolled steel, $4\frac{1}{2}$ inches in diameter and $87\frac{3}{4}$ inches long. It runs in two extra long babbitted bearings, one being 21 inches long and the other 16 inches long. This axle is a live axle, having the left-hand driver keyed

I H C TITAN OIL TRACTORS

(Construction of Titan 30-60-H. P. Tractor—Continued)



Main frame of the Titan H. P. tractor. Note that both countershaft and main axle have extra long bearings and are held in the same casting, which prevents the gears from getting out of alignment

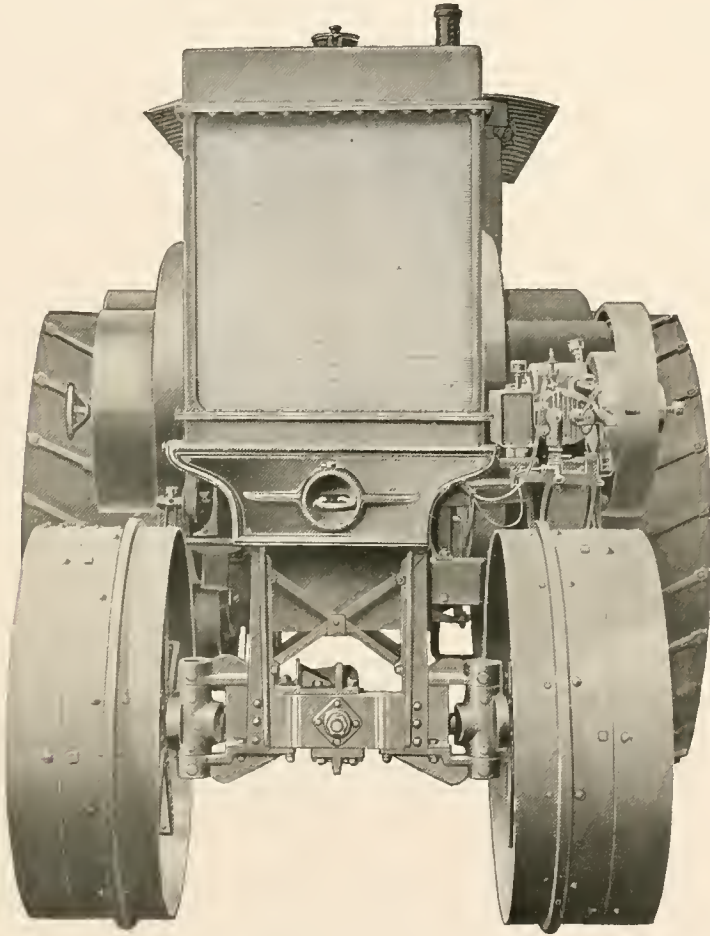
Wheels: The wheels are fitted with cast iron hubs. The spokes are of flat bar steel, up-set at the outer ends and riveted to the tires and hubs. This construction insures wheels of great durability and strength. The face of the drive wheels is 24 inches and they are equipped with proper sized lugs. The edges are re-enforced by small steel channels bent in and riveted. A simple and effective differential gear relieves the wheel hubs from all torsional strains. The left-hand driver is keyed to the live axle and therefore revolves with it. The right-hand driver is free to revolve on the axle and is bolted to one half of the differential. The other half of the differential provides a bearing for the large driving gear, and is keyed to the axle. When turning corners the differential gear provides for the difference in rotation of the wheels and distributes the power proportionately to each, although rotating at different speeds. The front wheels are provided with six-inch extensions as part of the regular equipment.

Oiling: The 30-60-H. P. Titan tractor is lubricated with two mechanical oilers — one a 10-feed oiler and the other a 4-feed oiler. The 10-feed oiler oils all the engine bearings and the cylinders. The 4-feed oiler lubricates the gears only — the differential gear, countershaft gears and pinion. Two oilers are used, so that when the engine is being used for belt work the oiler for the gears can be shut off, so there is no oil wasted. The countershaft bearings, front truck wheels, rear drive wheels, intermediate gear shaft, and differential pinions are all provided with grease cups.

The cups for oiling the countershaft and main axle bearings are provided with rods and handles which extend back to the operator's platform so that he may keep these parts well oiled without leaving his position.

I H C TITAN OIL TRACTORS

(Construction of 30-60-H. P. Tractor—Continued)



Front view of Titan 30-60-H. P. oil tractor

Filling pipes: The filling pipes for the fuel tanks are conveniently located on the belt side just forward of the flywheel. They are equipped with large funnel tops with removable brass gauze strainers.

Draw bar: A swinging draw bar equipped with a spring draft gear is provided. This prevents the load from being jerked along and also saves the tractor from undue strain in starting loads.

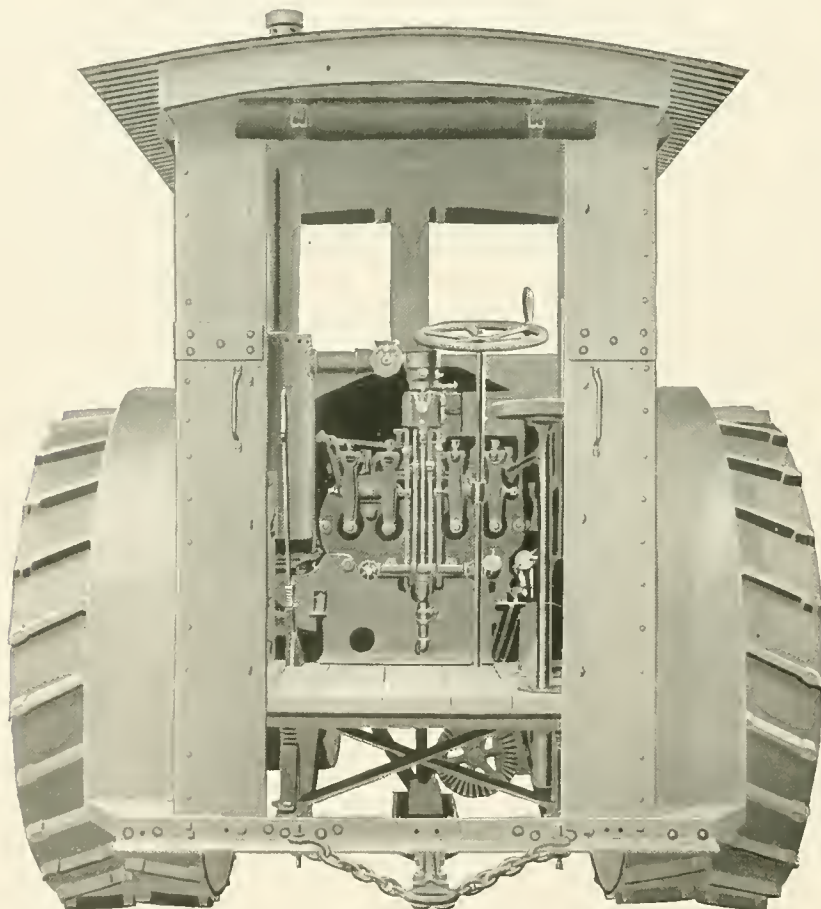
Cab: The cab is all steel and made with the view of greatest comfort and convenience for the operator. The platform is spring hung to relieve the operator of vibration. The windows are equipped on special order only with waterproof curtains, so the cab can be completely enclosed when operating in the rain or sleet, or when left out in the field. A comfortable spring seat is provided so the operator can see where the front wheels are running.

I H C TITAN OIL TRACTORS

(Construction of Titan 30-60-H. P. Tractor—Continued)

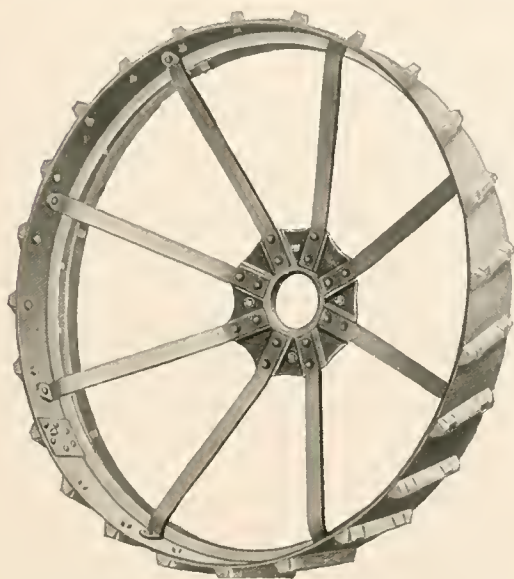
Operating levers: There are two operating levers—one for throwing the clutch in and one for the reverse. The levers are conveniently located. The movement of the front wheels is controlled by a steering wheel which is within easy reach of the right hand of the operator. The brake is operated by a foot pedal located just below the steering wheel.

Convenience and accessibility: This tractor has a large, roomy platform, and all parts of the engine have been arranged with regard to convenience and accessibility. The tool and battery boxes are on the left, out of the way of the operator. The filling pipes are only waist high, and are placed on the right-hand side of the engine towards the front, which makes it an easy matter to fill the fuel tank. All the operating levers, the mixing valve, speed-changing crank and battery switch are within arm's reach of the operator standing at the steering wheel.



Rear view of Titan 30-60-H. P. oil tractor

I H C TITAN OIL TRACTORS

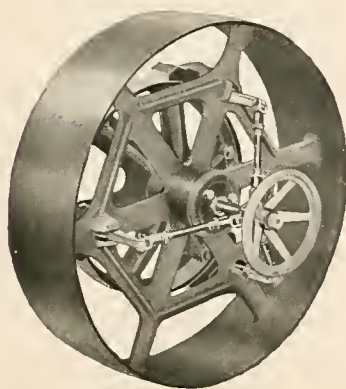


Extension tires: For traveling over wet or soft ground, ten-inch extension tires can be furnished on special order for all Titan tractors. They are detachable and can be put on or taken off in the field. They are braced with spokes and securely bolted both to the wheel tire and to the hub. In ordering be sure to state the size of the engine they are to be used on.

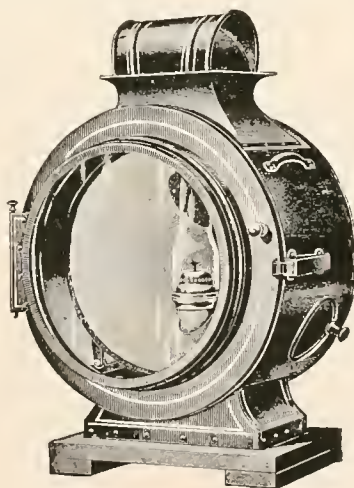
Slip-over tires: For traveling over paved roads or for general work where only belt power is needed, slip-over tires can be furnished on special order for the rear wheels of all Titan tractors to keep the lugs from digging into the road. These tires are made in four pieces, bolted to the wheel tire, and can easily be put on or taken off in the field.

Pulley: All Titan tractors are equipped with the I H C friction clutch pulley so that the power can be shut off or turned on to the machine being driven, without stopping the engine. It is of the external, three-shoe clutch type, and is operated by a hand-wheel, which is pushed in

to engage the clutch and pulled out to release it. The following special sizes of this pulley can be furnished on special order:



18-35-H. P.		30-60-H. P.	
Diam. Inches	Face Inches	Diam. Inches	Face Inches
18	12 $\frac{1}{2}$	28	10 $\frac{1}{2}$
20	12 $\frac{1}{2}$	30	10 $\frac{1}{2}$
22	12 $\frac{1}{2}$	28	12 $\frac{1}{2}$
24	12 $\frac{1}{2}$	30	12 $\frac{1}{2}$
26	12 $\frac{1}{2}$	--	--



Kerosene headlight

Headlight: For plowing or hauling at night, an oil head-light can be furnished on special order.

Extreme height	28 inches
Diameter of case	18 inches
Depth of case	12 inches
Size bottom board	9 x 15 $\frac{1}{2}$ inches
Diameter of glass	14 inches

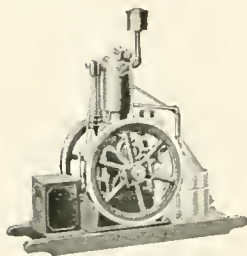
Reflector—Copper, silver plated.

Inside dimensions of reflector, 13 $\frac{1}{4}$ inches in diameter; 6 inches deep.

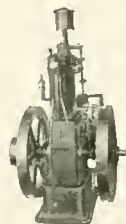
Net weight, 37 pounds.

I H C TITAN OIL TRACTORS

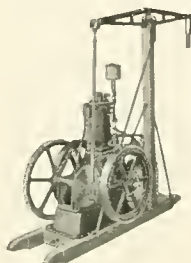
Titan Oil Engines — 30 Types, 15 Sizes The Most Complete Line of Engines Built



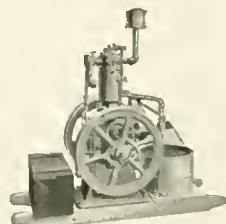
Vertical skidded



Vertical stationary



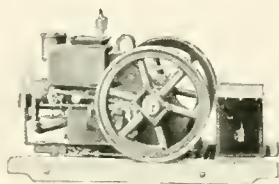
Pumping



Nonpareil skidded



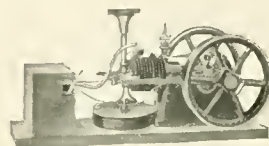
1-H. P. Gasoline



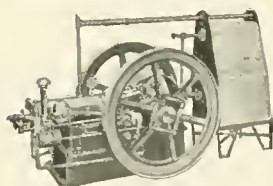
2½-H. P. Gasoline



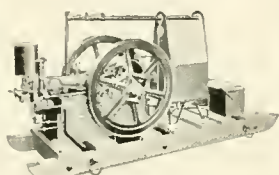
Nonpareil Stationary



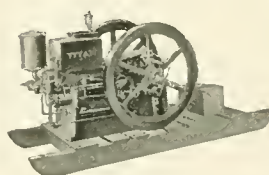
Air-cooled gasoline



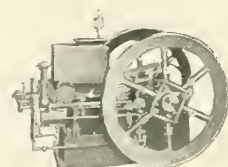
T. C. Stationary



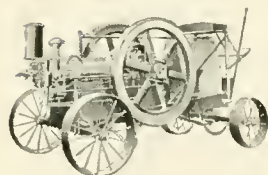
T. C. Skidded



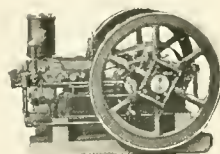
H. C. Skidded



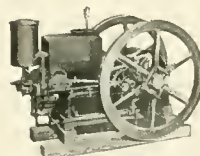
H. C. Stationary



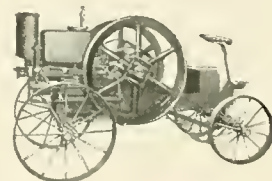
T. C. Portable



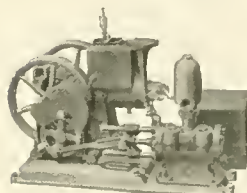
T. C. Mounting



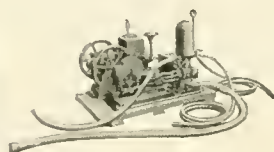
H. C. Mounting



H. C. Portable



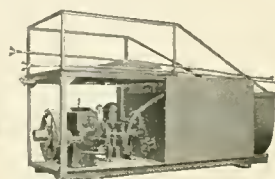
Pumping



Spraying



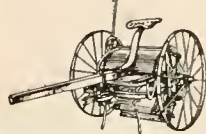
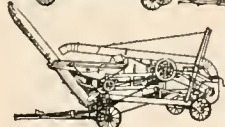
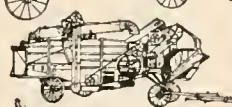
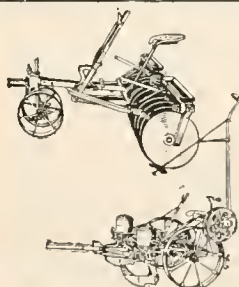
Sawing



Spraying

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I H C TITAN OIL TRACTORS



I H C LINE

GRAIN MACHINES

BINDERS
HEADERS
REAPERS
HEADER-BINDERS

HAY MACHINES

MOWERS
RAKES
HAY PRESSES
SWEEP RAKES
HAY LOADERS
STACKERS
TEDDERS
SIDE DELIVERY RAKES
COMBINED SWEEP RAKES
AND STACKERS

CORN MACHINES

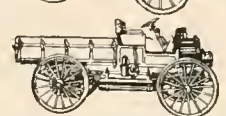
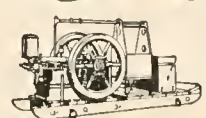
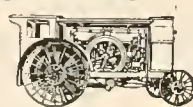
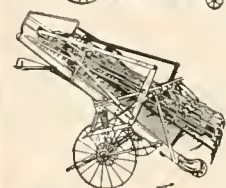
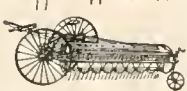
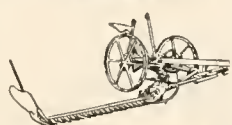
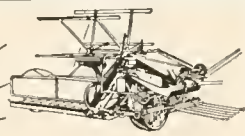
PLANTERS
PICKERS
BINDERS
ENSILAGE CUTTERS
CORNSTALK RAKES
STALK CUTTERS
SHELLERS
CULTIVATORS
HUSKERS AND SHREDDERS

TILLAGE

DISK HARROWS
CULTIVATORS
SPRING-TOOTH HARROWS
PEG-TOOTH HARROWS
COMBINATION HARROWS

GENERAL LINE

MOTOR TRUCKS
FEED GRINDERS
KNIFE GRINDERS
BINDER TWINE
THRESHERS
STONE BURR MILLS
GRAIN DRILLS
CREAM SEPARATORS
OIL AND GAS ENGINES
MANURE SPREADERS
FERTILIZER SOWERS
OIL TRACTORS
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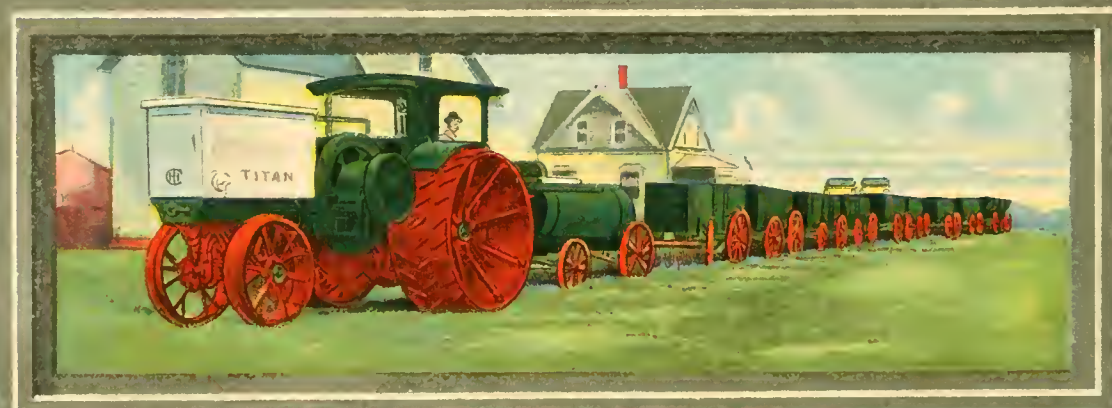
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